

Applicant : William James Moore et al.
Serial No. : 10/713,833
Filed : November 14, 2003
For : Alkaline Electrochemical Cell

Art Unit : 1745
Examiner : Ben Lewis

REMARKS

Claims 1, 9, 24, 30, 31 and 33-36 have been amended, and claims 17-23 have been cancelled. Claims 1-16 and 24-47 remain in the application. Reexamination of the application and reconsideration of claims 1-16 and 24-47 is respectfully requested.

Claims 1, 17, 24, 30 and 35 have been amended by reciting that the zinc powder further has a BET specific surface area greater than $400 \text{ cm}^2/\text{g}$. Support is found in claims 9 and 40 and on page 11, lines 2-3 of the specification.

Claim 9 has been amended to delete the phrase "a BET specific surface area greater than $400 \text{ cm}^2/\text{g}$ ", which has been incorporated into claim 1.

Claims 31, 33 and 34 have been amended to correct a typographical error by changing "cells" to "cell" in the preambles.

Claim 36 has been amended to correct a typographical error by changing "millamps" to "milliamps."

The provisional election without traverse of the invention of Group I (claims 1-16, 24-29, 30-34, 35-39 and 40-47) made by Mr. Robert Baraona in a telephone conversation with the Examiner on November 7, 2006, is affirmed, and claims 17-23, drawn to a process for manufacturing an electrochemical cell (Group II), have been cancelled.

In the Office action mailed November 15, 2006, the Examiner rejected claims 1-47. Claims 1-4, 9-13, 16, 40-44 and 47 were rejected under 35 USC § 102(e) as being anticipated by Malservisi et al. (US Patent Pub. No. 2004/0115532 A1). Claims 24, 25, 30, 31, 35 and 36 were rejected under 35 USC § 103(a) as being unpatentable over Malservisi et al. (US Patent Pub. No. 2004/0115532 A1). Claims 5-8, 14-15, 26-29, 32-34, 37-39 and 45-46 were rejected under 35 USC § 103(a) as being unpatentable over Malservisi et al. in view of Armacanqui et al. (US Patent Pub. No. 2004/0033418 A1). Applicants believe that the rejections of claims 1-16 and 24-47 have been overcome by the above amendments for the reasons presented below.

The Examiner rejected claims 1-4, 9-13, 16, 40-44 and 47 as anticipated by Malservisi et al. Independent claims 1, 17, 24, 30 and 35 have been amended to recite that the claimed electrochemical cell comprises zinc powder that, in addition to the other recited features, further has a BET specific surface area greater than $400 \text{ cm}^2/\text{g}$. This added feature is included in

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original 40 (not amended herein), which was also rejected. On page 5 of the Office action, the Examiner acknowledges that Malservisi et al. do not disclose BET specific surface area data but asserts that because Malservisi et al. and the present application utilize zinc powders with the same particle sizes and tap densities, the claimed BET specific surface area properties are inherent. The Examiner has not provided reasonable support for this assertion.

"In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990). "The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic." *In re Rijckaert*, 9 F.3d 1531 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993).

It is well known that the specific surface area of particulate materials is affected by a number of factors, including the size, shape and surface conditions of the particles and the particle size distribution, and it is also well-known that surface roughness and surface connected porosity can affect the specific surface area many times more than the area associated only with size and shape. The Examiner has only considered the disclosure of Malservisi et al. regarding particle sizes and tap densities and ignored the surface condition of the particles, such as surface roughness and porosity, which are recognized as being much more important than particle size and shape in influencing specific surface area.

The present application discloses suitable zinc particles can be made using a centrifugal atomization process, one of the "conventional" processes disclosed by Malservisi et al. Malservisi et al. teach that zinc particles made using an impulse atomization process should be used and that (para. 0039):

... impulse atomization allows the atomization of zinc and zinc alloys into zinc powders with unique physical characteristics including, for example, the shape of the particles and the particle size distribution. Other unique properties are directly associated with the above characteristics, for example a variety of particle packing and densities varying between 0.5 and 4.6 g/cc can be achieved.

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Malservisi et al. also disclose that zinc particles of different shapes can be made with an impulse atomization process, and the preferred tap densities are different based on the particle shape: about 2.8-3.2 g/cc for stranded particles, at most about 3.6 g/cc for tear drop particles, and at least about 4.1 g/cc for spherical particles.

Applicants do not believe that a BET specific surface area greater than 400 cm²/g is an inherent property of zinc powder having a tap density within the range of greater than 2.80 g/cc and less than 3.65 g/cc as recited in claims 1, 24, 30, 35 and 40 and/or having a particle size distribution with a D₅₀ less than 130 microns (claims 9, 14, 15, 40, 45 and 46). The Examiner's technical reason for asserting inherency is based on a general correlation between BET specific surface area and two other properties of the zinc powder, ignoring factors that are recognized as more important. It is not reasonable to expect that a specific surface area greater than 400 cm²/g necessarily results simply because there is overlap between the particle sizes and tap densities in the present application and those disclosed by Malservisi et al., especially when the process disclosed by Malservisi et al. is different from the example in the present application. This is particularly true for a process such as impulse atomization, which according to the teachings of Malservisi et al. can produce zinc particles with not only broad ranges of particle sizes and packing densities, but a wide variety of particle shapes (stranded, tear drop and spherical) as well. According to the teachings of Malservisi et al., "impulse atomization allows the atomization of zinc and zinc alloys into zinc powders with unique physical characteristics," suggesting that BET surface areas less than 400 cm²/g can be expected in at least some cases, even when several types of zinc powders having different shapes and tap densities are blended together. For these reasons, Applicants submit that the examiner has not provided a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art as required.

The Examiner rejected claims 5-8, 14-15, 24-39 and 45-46 as obvious over Malservisi et al., when considered either alone or in view of Armacanqui et al. For the reasons presented above, a BET specific surface area greater than 400 cm²/g is not an inherent property of the zinc powder in the independent claims 1, 24, 30, 35 and 40, and Armacanqui et al. do not disclose BET specific surface area data. Therefore, neither of the references relied upon by the Examiner contain each and every one of the limitations of any of the claims remaining in the present

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application, so the Examiner has not established a *prima facie* case of obviousness as required for rejection under 35 USC § 103(a).

For the above reasons, Applicants believe that the rejections have been traversed and the application as amended is in condition for allowance. Withdrawal of the rejections and allowance of claims 1-16 and 24-47 is requested.

Respectfully submitted,

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